

REMARKS

Claims 1-9 are pending in the application and stand rejected.

Double Patenting

Claims 1, 2 and 3 stand provisionally rejected under the judicially created doctrine of double patenting over claim 1 of co-pending U.S. Application No. 09/807,772, and claims 1-6 and 8 stand provisionally rejected under the judicially created doctrine of double patenting over claim 1 of co-pending U.S. Application No. 10/276,195. Applicants submit concurrently with the present response Express Abandonment Under 37 CFR 1.138 forms for both of these co-pending cases, thereby rendering the instant double patenting rejection moot. Copies of these forms are included with the present response.

Rejection under 35 U.S.C §112

Claims 4-6, 8 and 9 stand rejected under 35 U.S.C §112 because of their recitation of “mixture of one or two or more.” The claims have been amended to recite a “mixture comprising one or two or more.”

Rejection under 35 U.S.C §102

Claims 1-9 stand rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,395,419 to Kuwahara et al. The Examiner noted in her rejection that the instant claims are product claims and thus any process limitations are not accorded any patentable weight. Applicants have now recast the claims as process claims, and submit that in view of the novel process limitations included in the claims, the present case is now allowable.

In particular, the ‘419 patent teaches that solid polymer electrolyte is prepared by forming a solution of a polymer and a filler in a solvent into a non-plasticized film and then evaporating off the solvent from this film. Thus evaporating the solvent creates a polymer matrix that has pores of only a few tens nanometers in size, and which therefore cannot fully contribute to

absorption of liquid electrolyte. This is acknowledged by Kuwahara at column 2, lines 44-55, wherein they state that "the composite material of the invention has a higher swelling factor than the polymer alone probably because agglomeration of filler particles into secondary and third-order flocculated particles has occurred, the bonding state between the polymer and the filler, that is, the surface state of filler particles or the interface between the polymer and the filler has changed, and as a result, micro or meso pores have been formed in the composite material." Thus, Kuwahara teaches us that liquid electrolyte is absorbed in micro or meso pores formed on the interface of the polymer and filler, but not in the polymer matrix.

In contrast, in the instant invention as set forth in the amended claims, a solid polymer electrolyte is prepared by forming a solution of a polymer and a filler in a solvent into a polymer film and then exchanging the solvent for a non-solvent, and then evaporating the non-solvent from the polymer film. In this manner, many pores of a few hundreds to a few thousandths nanometers in size are formed in the polymer matrix. Therefore, in the instant invention, liquid electrolyte is absorbed mainly by the porous polymer matrix, to which the filler provides support as an absorbent. Such significant differences in the pore size between Kuwahara and the instant invention lead to equally significant differences in sorption ability (swelling factor) and absorption time. Kuwahara teaches that their polymer film displays a sorption ability of > 2.2 (please see, e.g., col. 4, l. 63) and an absorption time of 1 hour (Examples 1 and 2). Microporous polymer films produced according to the present invention, on the other hand, have displayed sorption ability of 5.1-85 (as per Table 1 of Example 1 in the specification) and an absorption time of only 10 minutes (Examples 1 and 2).

In view of the above, Applicants submit that the claim as amended are now allowable and respectfully request the Examiner to reconsider and pass all claims to issue.

The Commissioner is authorized to charge any additional fees which may be required or credit overpayment to deposit account no. 12-0415. In particular, if this response is not timely filed, the Commissioner is authorized to treat this response as including a petition to extend the time period pursuant to 37 CFR 1.136(a) requesting an extension of time of the number of months necessary to make this response timely filed and the petition fee due in connection therewith may be charged to deposit account no. 12-0415.

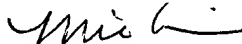
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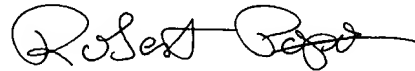
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